

## ABSTRACT OF THE DISCLOSURE

A compressor active surge control system that includes an air recirculation line that has a first end connected downstream of a compressor outlet and a second end connected upstream of a compressor inlet. The gas recirculation line 5 recirculates compressed air from the compressor outlet to the compressor inlet. Also included in the system is a mixer positioned to receive both ambient air and recirculated air. Mixing of the air homogenizes the air prior to its introduction into the compressor. An air cooler may be included that cools the recirculated air 10 prior to its introduction into the compressor. Cooling and mixing of the recirculated air expands the operating range of the compressor by reducing the incidence of surge. Various existing components, such as intercoolers and filters, may serve the additional duty of cooling or mixing the recirculated air.